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(19) (CA) **CANADIAN PATENT** (12)

(54) Construction Kit

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ABSTRACT OF THE DISCLOSURE

A toy construction kit comprises modular panel components and flexible attachment strips. Each panel component has fastening zones around its perimeter for releasable attachment with attachment strips. During use, panel components are juxtaposed and linked together by attachment strips.

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TOY CONSTRUCTION KIT

## BACKGROUND OF THE INVENTION

1. Field of the invention:

5 The present invention generally relates to a  
toy construction kit. More particularly, the present  
invention concerns a kit of parts comprising  
interchangeable components of various shapes which can  
all be temporarily fastened together, in various  
10 configurations of construction, by means of conventional  
releasable connectors.

2. Brief description of the prior art:

15 It is known that children enjoy playing in  
enclosed structures such as cardboard boxes. During  
play, using their imagination, children can simulate  
being, for example, in a boat, a race car, a plane, or a  
submarine, or being a deep-sea diver or a robot. Known  
toy construction kits have attempted to permit a child to  
construct such enclosed, or partially enclosed, play  
environments.

20 Known toy construction kits comprise  
connectable parts such as posts, panels, and interlocking  
blocks. Those known construction kits use various known  
releasable connecting means such as bolts, interlocking  
25 shapes, sliding connectors, and hook and loop type  
fasteners.

30 The known toy construction kits using hook and  
loop type fasteners as connectors between the components  
provided in the kits, have, up to now, invariably  
required structural support components, such as posts, as  
the sole connecting elements between panel components.  
In those kits, the post components are used as beams,  
studs, girders, rafters or trusses or simply to connect

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two or more adjoining components. To permit multiple configurations when constructing, each components are interchangeable and are provided with fastening zones wherein both hook and loop elements are found.

5                    Numerous disadvantages flow from the concept that both hook type and loop type fastening elements must be found together on each contact point found on a given construction component. The first of these disadvantages is that the posts components and the panel components  
10                   must be aligned in a relatively precise manner for a secure connection to be achieved. This will often require too much skill on the part of a small child as a user of the construction toy.

15                   Another important disadvantage occurs when a child of limited strength attempts to dismantle a construction without assistance. With the known types of construction toys using a plurality of connecting points it often becomes extremely difficult for a child to dismantle the toy. This occurs because to dismantle an  
20                   arrangement of connected components, it may be necessary to release up to four hook and loop fastener contact points simultaneously. As can be appreciated, hook and loop fasteners, once fastened, can only be separated by forcibly prying apart the connection points. It can also  
25                   be appreciated that such separating action may often require considerable force.

30                   A further disadvantage of these construction toys is that the hook type contact zone found on the construction components will readily attach itself to any material that is formed of loops. These materials will include, for example, carpet, fabric covered furniture, woollen clothes, etc. As this hook type contact zone is found on all of the construction components, such

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elements would be prone to adhere to the said material formed of loops.

5        There is another disadvantage stemming from the unwanted adherence of the hook type fasteners. During storage, the construction components would likely require to be placed in relative proximity. The components will likely all adhere together thereby causing considerable difficulty for a small child wanting to forcibly separate the components and begin a construction.

10       A still further disadvantage is that the wearing apparel worn by a child will often present a looped fabric likely to adhere to the construction parts. This may result in potentially hazardous situations for the child.

15       Also disadvantageous is that the panel components are only provided with attachment means on their corners or extremities. This in turn requires panels to be manufactured only in unit lengths and widths to allow interchangeability between panels.

20       It is therefore clearly advantageous to resolve the difficulties noted above by providing a toy construction kit, having interchangeable, and releasably connected panel components without the necessity of any additional structural support components such as posts and which can be safely and easily assembled and  
25       disassembled even by a small child. To optimize versatility it is also advantageous to provide connection means along the entire perimeter of each panel component so as allow constructions using panels to be of varying  
30       shapes and sizes.

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OBJECT OF THE INVENTION

5 An object of the present invention is to  
provide a versatile toy construction kit comprising a  
variety of interchangeable components and suitable  
releasable connectors, having greater versatility and  
ease of use by a child than the prior art, and whereby  
the interchangeable components may be temporarily  
fastened together in a given construction effort without  
the need of additional structural support components such  
10 as posts.

Another object is to provide a safe and  
inexpensive to manufacture toy construction kit which can  
be easily stored, assembled and dismantled, even by a  
small child.

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SUMMARY OF THE INVENTION

In accordance with the present invention, there  
is provided a kit of parts for use as construction toy  
components comprising:

20 (a) a plurality of interchangeable panel  
components, and

(b) a plurality of flexible attachment strips,  
each of said panel components having disposed thereon  
affixation means suitable for cooperative and releasable  
attachment with said attachment strips, whereby, a  
25 construction is erected by placing said panel components  
in mutual proximity and placing said flexible attachment  
means to releasably attach onto affixation means of  
proximate panel components thereby forming a secure  
releasable connection between said panel components.

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Also in accordance with the present invention  
there is provided a kit of parts for use as construction  
toy components comprising:

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(a) a plurality of interchangeable panel components, and

5 (b) a plurality of flexible attachment strips, each of said panel components having disposed thereon, along its entire planar perimeter, affixation means  
10 suitable for cooperative and releasable attachment with said attachment strips, whereby, a construction is erected by placing said panel components in mutual proximity and placing said flexible attachment means to  
15 releasably attach onto any portion of said affixation means of proximate panel components thereby forming a secure releasable connection between said panel components.

15 The objects, advantages and other features of the present invention will become more apparent upon reading of the following non restrictive description of a preferred embodiment thereof, given by way of example only with reference to the accompanying drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

20 In the appended drawings:

Figure 1 is a perspective view of a panel component in accordance with the present invention;

Figure 2 is a perspective view of an attachment strip;

25 Figure 3 is a perspective view showing one of a the possible arrangements of panel components in accordance with the present invention;

Figure 4 is a perspective view of one possible completed arrangement of panel components, in this case a representation of a submarine.

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DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Figure 1 of the appended drawings illustrates panel component 10 and Figure 2 illustrates flexible releasable attachment strip 20 in accordance with the present invention.

The panel 10 is generally quadrilateral and is made of suitable rigid and lightweight material, such as plastic, suitable for handling by a child. In a preferred embodiment, panels 10 are composed of a medium density plastic less than  $\frac{1}{4}$  of an inch in thickness. Panel 10 also comprises VELCRO (trade-mark) loop strips 11 permanently affixed along the perimeter of the panel 10.

Attachment strip 20 is suitable for cooperative releasable attachment, on one side thereof, with any portion of loop strips 11. More particularly shown in Figure 2, Attachment strip 20 comprises, on one side thereof, a plurality of hook elements 21 suitable for cooperative engagement with loop elements 12. The dimensions of attachment strip 20 are suitable for handling by a child and more particularly width 22 is larger than width 13 of loop strips 11.

During use of the toy, when erecting a construction, panel 10 and other panel components (Figure 3) can be releasably joined in a plurality of ways by use of the loop strips 11 which are cooperatively engaged by the hook elements 21 disposed on the attachment strips 20. Interchangeable panel components may be temporary fastened together in a construction simply by affixing attachment strips 20 onto loop strips 11 found on each panel component. This procedure will be more particularly described with reference to Figure 3.

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In Figure 3, there is shown an embodiment of an assembled partial construction 30 using panel components 10, 31, and 32. Panel 31 is rectangular while panel 32 is triangular. Panels are maintained in relative positional relationship by attachment strips 20. It will be appreciated that attachment of panels 10, 31, and 32 is achieved by disposing attachment strips 20 onto portions of loop strips 11 so that the said attachment strips 20 will simultaneously contact loop strips 11 of two or more proximate panels thereby forming a bridge between two adjacent panels.

Figure 3 illustrates one of the many constructions which may be erected in accordance with this invention and also illustrates the many possible positioning of attachment strips 20. It is to be understood that exact placement of attachment strips 20 is arbitrary. As shown in the embodiment of Figure 3, placement of four attachment strips 20 provides articulated connections 33 and 34 about panel 10.

Turning now to Figure 4, there is shown an assembled construction 40 in the shape of a submarine. Construction 40 is shown with top hatch 41 shown in an open position. Figure 4 illustrates how in accordance with this invention, it is possible to create a hinge between panel components by use of attachment strips 20. Panel component 42 and panel component 43 are connected by attachment strips 44 and 45. The resulting connection will create a hinge effect along connection line 46. This will allow a child to enter the construction 40 and close the top hatch 41 thereby creating a play simulation of being inside a submarine. Attachment strips 45 and 46 show two alternative ways of creating a hinge between panel components 42 and 43.

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Therefore, as a child uses the kit of parts, there is no need for precise positioning of the attachment strips 20 when erecting a construction. The Velcro (trade-mark) hook and loop fastening system will allow the child to join two or more panel components together simply by placing them near one-another and by applying a hook tape on the loop strips found on the components. It will be appreciated that the affixation of the components to one another is not dramatically hampered by the precise positioning of the hook tape. It is not particularly important for the hook tap to be placed orthogor. ly, longitudinally or at a specific angle with relation to the loop strips found on the construction components. The connection is achieve simply by contacting any given portion of the hook tape with any given portion of the loop strips. It will be appreciated that even a small child may comprehend and effectively use this technique to erect a construction.

The construction kit of the present invention has numerous associated advantages. Firstly, the flexibility of attachment strips 20 allow rapid and easy peeling off of the attachment strips 20 from panels components of a completed construction thus dismantling the construction. Also, since only the loop strips 12 are permanently secured to the panel components, the risk of unwanted adherence between panel components or between panel components and other surfaces is thereby alleviated. The present invention therefore also solves the problem of the toy sticking to a child's clothing. Moreover, because the means for attachment uses attachment strips 20, the connections made between panel components can become hinges thereby allowing the incorporation of openings in chosen constructions without the requirement of special hinged panels. Also advantageous is that the loop strips 11 are disposed along the outer planar perimeter of each panel component.

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5 This favours versatility since each panel component can be connected to another panel component simply by placing attachment strips 20 anywhere along the loop strips 11 found on each panel component. This also means that the panel components need not be manufactured in unit lengths and widths for connections to be achieved between panel components.

10 It will be appreciated that the intrinsic flexibility of the construction kit of the present invention enables a wide variety of toys to be constructed, for example, a submarine, a boat, a car, a canoe, a plane, a locomotive, a helicopter, a tent, a bed, a robot, a spaceman, or a deep-sea diver.

15 In a preferred embodiment, the outside dimensions of the panel components are inter-related following a system based on a unit measure of 8 inches. By way of illustration, the resulting dimensions for the panels 10, 31 and 32 (Figure 3) would be as follows:

20 Panel 10 of planar surface dimensions equal to two units by two units (16 inches by 16 inches);

Panel 31 of planar surface dimensions equal to one unit by two units (8 inches by 16 inches)

25 Panel 32 of planar surface dimensions equal to one unit in length and having an hypotenuse of two units in length (8 inches by 16 inches).

30 It will be understood that the above proposed dimensions constitute preferred embodiments suitable for handling by a small child. It will be also understood that a subsequent increase or decrease in the measurements may be deemed necessary whilst remaining

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within the spirit of the invention to accommodate larger or smaller children of different age groups.

5 Although the present invention has been described hereinabove by way of a preferred embodiment thereof, this embodiment can be modified at will, within the scope of the appended claims, without departing from the spirit and nature of the present invention.

10 More particularly, although the previous description is of a toy, it is possible to envisage other uses which remain within the spirit of the invention.

15 For example, the construction kit of the present invention could be adapted, for example by increasing the size of the panel components, to build a temporary shelter for a disaster area, or, by changing the material of the panel components to a light-weight bullet-proof material, a shelter suitable for military or paramilitary use could be constructed. To achieve weather-proofing of the structure, a wide water-proof attachment strip could be applied along the joint of two  
20 connected panel components.

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The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A kit of parts for use as construction toy components comprising:
  - (a) a plurality of interchangeable panel components, and
  - (b) a plurality of flexible attachment strips, each of said panel components having disposed thereon affixation means suitable for cooperative and releasable attachment with said attachment strips, whereby, a construction is erected by placing said panel components in mutual proximity and placing said flexible attachment means to releasably attach onto affixation means of proximate panel components thereby forming a secure releasable connection between said panel components.
2. A kit of parts for use as construction toy components comprising:
  - (a) a plurality of interchangeable panel components, and
  - (b) a plurality of flexible attachment strips, each of said panel components having disposed thereon, along its entire planar perimeter, affixation means suitable for cooperative and releasable attachment with

said attachment strips, whereby, a construction is erected by placing said panel components in mutual proximity and placing said flexible attachment means to releasably attach onto any portion of said affixation means of proximate panel components thereby forming a secure releasable connection between said panel components.

3. A kit of parts as claimed in claims 1 or 2, wherein the affixation means and attachment strips are hook and loop connecting means.

4. A kit of parts as claimed in claims 1 or 2, wherein the affixation means are loop connectors and the attachment strips are corresponding hook connectors.

5. A kit of parts as claimed in claims 1, 2, or 4, wherein the panel components are alternatively square, rectangular, or triangular.

6. A kit of parts as claimed in claims 1 or 2, wherein the panel components are constructed from a suitable plastic of low flexibility.

7. A kit of parts as claimed in claims 1 or 2, wherein the panel components are constructed from a suitable plastic of low flexibility.

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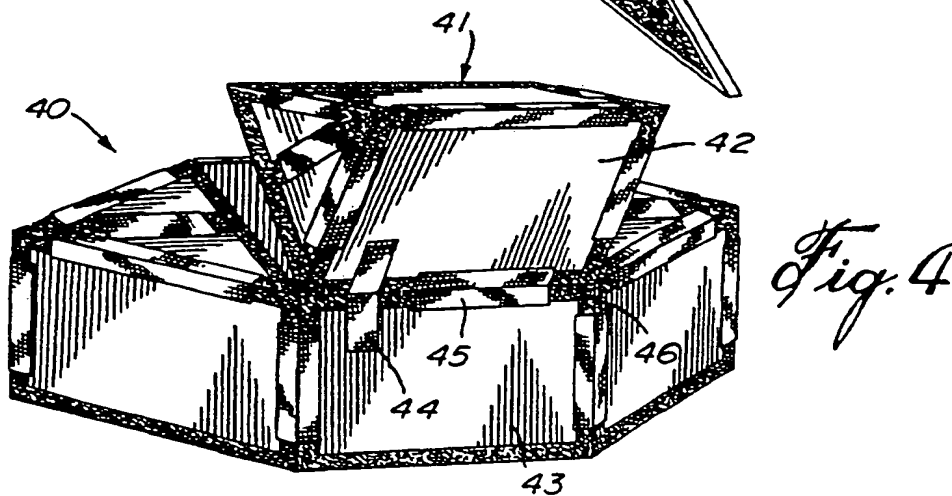
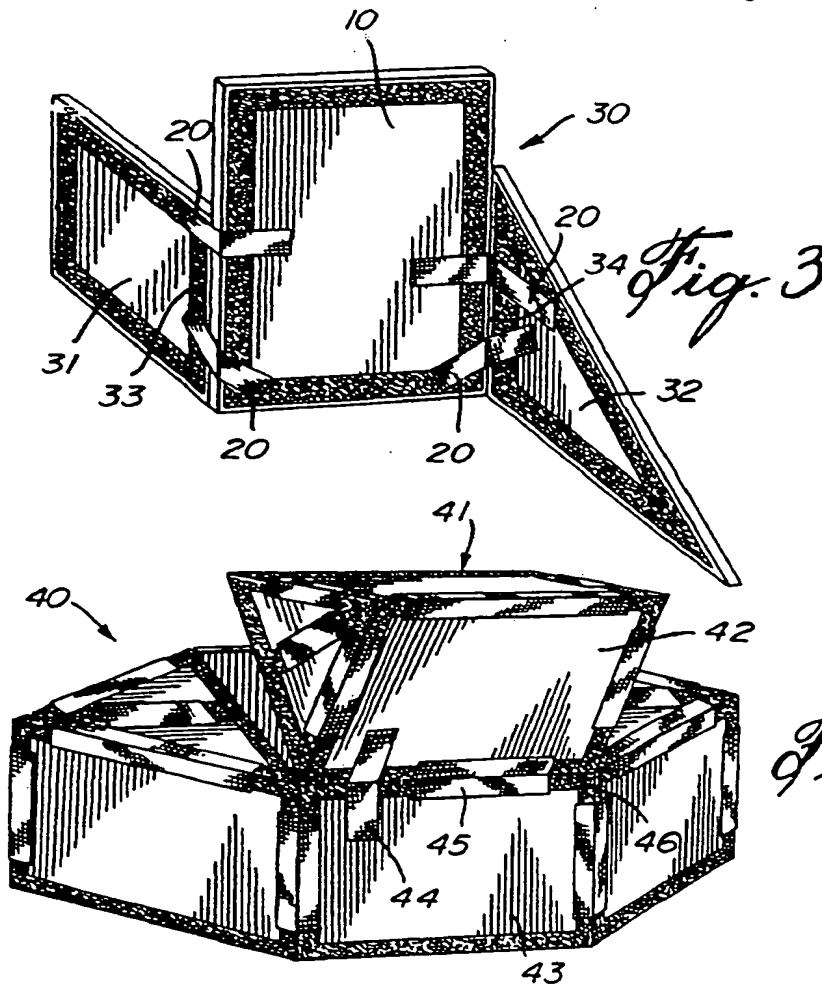
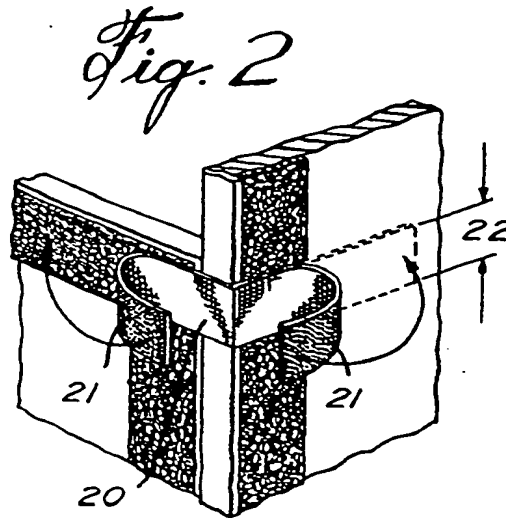
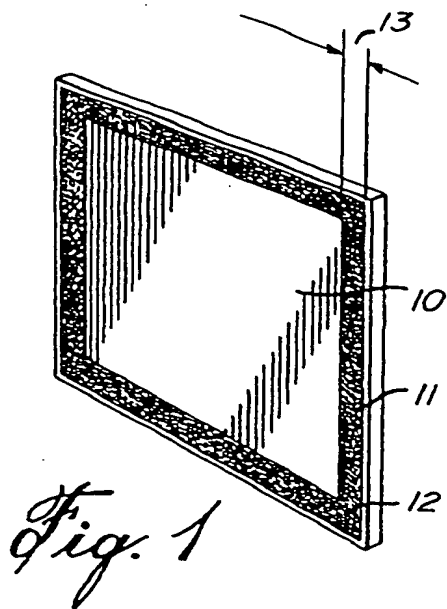
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8. A kit of parts as claimed in claims 1 or 2, or 4, wherein the panel further include panels selected from panels having window openings.



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